REMARKS

This is in response to the Office Action dated June 7, 2004. New claims 32-39 have been added. Thus, claims 4-7 and 12-39 are now pending.

Applicant notes with appreciation the Examiner's allowance of claims 6, 21-23, 27 and 31.

Claim 4 stands rejected under 35 U.S.C. Section 103(a) as being allegedly unpatentable over Armezzani in view of Inaba. This Section 103(a) rejection is respectfully traversed for at least the following reasons.

In order to meet claim 4, the Office Action contends that it would have been obvious to have used the adhesive of Inaba to adhere solder mask layer 6 of Armezzani to thin film carrier 1. However, this alleged combination is incorrect and would never have been done by one of ordinary skill in the art.

Armezzani expressly states that the purpose of bottom-side solder mask 6 is to keep the melted/liquid solder in apertures defined in pads 8 from wicking up bottom side circuit line 7 at high reflow temperatures (col. 5, lines 4-8). The bottom-side solder mask 6 is also for strengthening the solder joint in the apertures defined in pads 8 (col. 5, lines 8-9). However, if the adhesive of Inaba were provided between the solder mask layer 6 and film carrier 1 of Armezzani as alleged by the Office Action, this functionality would not be performed. Instead, the adhesive proposed by the Office Action would melt during high reflow temperatures, weaken any solder joint, reduce conductivity of the

solder and cause device failure, and cause corrosion therein. Thus, give the stated purposes of Armezzani for solder mask 6, one of ordinary skill in the art would never have located an adhesive between the solder mask 6 and the solder in pad 8 apertures as alleged in the Office Action, because to do would destroy the functionality of Armezzani's device and would prevent the objectives of Armezzani's solder mask from being achieved. Thus, the combination proposed by the Office Action is incorrect and would never have been done by one of ordinary skill in the art.

Additionally, Armezzani discloses an electronic package containing a flexible film carrier 1 having circuitry 7 on both major surfaces thereof (col. 2, lines 53-56; Figs. 3, 5). Also disclosed is that a typical film thickness of carrier 1 is from 2-10 mils (col. 4, lines 28-29). Armezzani further discloses a solder mask 5 on one surface and a solder mask 6 on another surface of carrier 1, and that the dry film (Vacrel) masks 5, 6 are about 2 mils thick (col. 4, lines 52-55; col. 5, lines 15-22; Fig. 3). When made of a dry film, Armezzani's masks are formed on both major surfaces of a base material by photolithography. In contrast, according to claim 4, the protecting films are molded first before being attached to a substrate. Thus, Armezzani is significantly different from the invention of claim 4 in at least this regard.

As explained above, Armezzani forms a Vacrel film on major surfaces of the carrier with a method that does not require the use of an adhesive. Armezzani's Vacrel film is bonded to the carrier 1 by optical curing, not via adhesive layer. In contrast, Inaba discloses a film 7 with an interleaving adhesive layer 6 (col. 2, lines 48-53). This is

because Inaba's synthetic film does not cure under light. This means that the Inaba flexible insulating film 7 does not adhere to circuit wiring conductors 4 without using an adhesive. Inaba only discloses adhering a non-optical-curing synthetic resin film using an adhesive. Unlike Inaba's film, the Armezzani film is optically curing and does not need an adhesive. Thus, one of ordinary skill in the art would never have used Inaba's adhesive in the device of Armezzani's because Armezzani's film is optically during and does not need an adhesive. There is no reason why anyone of ordinary skill in the art would have used an adhesive to bond a film to a substrate where the film did not need an adhesive, and where the presence of such an adhesive may even harm adhesion characteristics. The Section 103(a) rejection is incorrect for this second reason as well.

On page 3, lines 6-8 of the Advisory Action dated Aug. 25, 2004, the Examiner contends that "[o]ne of ordinary skill in the art would select any of a number of known adhesives, *such as the high temperature epoxies disclosed by Armezzani* (see col. 2, lines 55-65), to avoid having the adhesive turn liquidous during a solder reflow operation." The Examiner has misinterpreted Armezzani in this regard. The epoxy resin or other materials disclosed in col. 2, lines 55-56 of the reference is actually a material of the flexible film carrier 1 – not an adhesive. This misinterpretation of the reference by the Office Action illustrates that the entire Section 103(a) rejection is fundamentally flawed. In fact, Armezzani is totally silent as to the use of an adhesive in this respect. Furthermore, there is no evidence that suggests the existence of an adhesive that does not

turn liquidous during s solder reflow operation of the Armezzani reference. Again, the Office Actions' contentions are without support.

If the adhesive disclosed in Inaba was used in the structure of Armezzani, a solvent of the adhesive would dissolve the dry film (solder mask 5, 6), causing it to mix with the adhesive. As a result, the function of the dry film would be lost. Accordingly, one of ordinary skill in the art would never have made such a combination, because to do so would *destroy* the functionality of the resulting device.

Still further, one of ordinary skill in the art would recognize that no adhesive is required in forming the protecting film by photolithography as in Armezzani. For example, the dry film "Vacrel 8120" used in Armezzani does not require an adhesive. This is yet another reason why one of ordinary skill in the art would never have used the adhesive of Inaba in Armezzani. There is absolutely no motivation of suggestion of the Office Action's proposed combination of references.

Since the Section 103(a) combination is incorrect for at least the reasons set forth above, the rejection should be withdrawn with respect to all claims rejected based on the combination.

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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